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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,257	10/30/2003	William W. Cheng	03T004	2940

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EXAMINER	
WELLS, KENNETH B	

ART UNIT	PAPER NUMBER
2816	

NOTIFICATION DATE	DELIVERY MODE
03/19/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/698,257	CHENG ET AL.	
	Examiner	Art Unit	
	Kenneth B. Wells	2816	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 January 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *28,29,33,35 and 37-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *28, 29, 33, 35 and 37-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Introduction

1. The response filed on 1/11/08 has been received and entered in the case.

Claim Rejections - 35 USC § 103

2. Claims 28, 29, 33, 35 and 37-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art in view of Baskett.

Applicant's admitted prior art (AAPA) Fig. 1 shows all of the limitations of the claims except for the recited cascode transistors and the second/third current sources. The recited first and second current summing buses in AAPA Fig. 1 are signal lines 16 and 18, respectively; the recited plurality of current switches are circuits 12 and 14, respectively; the recited first current sources (one within each current switch) are circuits 20 and 22; and the recited differential pairs of transistors are Q1/Q2 and Q3/Q4. The recited cascode transistors and the second/third current sources (BJTs QA through QD in applicant's invention), though not disclosed, nevertheless would have been obvious to a person having ordinary skill in the art because the

use of a pair of cascode transistors together with second/third current sources for providing respective "trickle" currents to the emitters of the cascode transistors is old and well-known in the art, one example being shown in Fig. 1 of Baskett. As seen in this figure, a pair of cascode BJTs 12, 14 are provided along with second and third current sources 16, 18 for providing respective "trickle" currents to the emitters of the cascode transistors in the same manner as those of applicant's invention (i.e., BJTs QA through QD in instant Fig. 3). Baskett describes his trickle current sources as "keep alive" current sources, see column 1, lines 41-61, where these current sources 16, 18 (and also the cascode BJTs) are added to a conventional differential amplifier in order to achieve several specific benefits/advantages (i.e., reducing miller capacitance, reducing switching delays, and reducing voltage variations at the output nodes). As to the limitation that the trickle currents are approximately 10 to 100 times smaller than the current flowing through the first current source, note the discussion in Baskett that his keep alive current sources 16, 18 are made so small that the currents through BJTs 12 and 14 will only be a "nominal" amount of current even when the differential transistors 20/22 are off (column 1, lines 52-55). As to the limitation that the first and second summing busses are analog

having first ends coupled to ground and other ends coupled to the collectors of the cascode transistors, this does not distinguish over applicant's admitted prior art in view of Baskett because such will clearly be the case when the admitted prior art circuitry of Fig. 1 is combined with the above-noted teachings of Baskett, i.e., the summing busses 16 and 18 have first ends coupled to ground (via resistors RL, just as in applicant's invention shown in instant Fig. 3) and when the cascode BJTs 12 and 14 of Baskett are added to the circuit of instant Fig. 1, they will be respectively coupled between the collectors of the first differential pair Q1, Q2 and the summing busses 16, 18 and also between the collectors of the second differential pair Q3, Q4 and the summing busses 16, 18.

As to the use of a driver circuit in claim 37, having the structure/function recited in claims 38 and 39, see the rejection set forth in paragraph seven of the office action mailed on 11/16/04 where such a driver circuit limitation was rejected as being obvious as well.

Response to Arguments

3. Applicant's arguments filed on 1/11/08 have been fully considered but they are not persuasive.

Applicant has now dropped all of the previous arguments that it would not have been obvious to combine the admitted prior art with Fig. 1 of Baskett, and instead is now simply arguing that the claims are distinguishable in view of the limitation that the recited trickle currents are "approximately 10 to 100 times smaller than said first current". In making this argument, applicant points to column 1, lines 53-61 of Baskett where it is stated that the current through transistors 16 and 18 is a substantial portion of the total current entering nodes 26 and 28, respectively. In view of this teaching, applicant concludes that Baskett "teaches away" from the limitation that the recited trickle currents are "approximately 10 to 100 times smaller than said first current". This argument is not persuasive, however, because it is old and well-known in the art that keep alive currents are typically made to be very small, i.e., 1% or less of the tail current (note, for example, column 2, lines 16-30 of Wheatley, Jr. et al). In view of the fact that typical keep alive currents are equal to 1% or less of the tail current, a person having ordinary skill in the art reading column 1, lines 53-61 of Baskett will be motivated to

set the keep alive currents to be substantially greater than 1% or less of the tail current, for example 5-10% of the value of the tail current. Such a value would clearly be "substantial" in that it is up to 10 times greater than the typical value of a keep alive current level (and it is also substantial in view of power consumption requirements, i.e., keeping power consumption to a minimum). Choosing such a magnitude for the keep alive currents would be both "substantial" (consistent with the teachings of Baskett at column 1, lines 53-61) and would also meet the limitation of approximately 10 to 100 times smaller than the tail current. Moreover, applicant should note column 1, lines 52-55 of Baskett, where it is indicated that only a nominal amount of current will flow from VCC through transistors 12 and 16 down to ground when transistor 20 is off. This statement by Baskett supports the above-noted discussion that even though the keep alive currents are "substantial", they are still relatively small (hence the term "nominal").

In addition, as noted in the previous office action, the relevant case law surrounding this issue also supports a conclusion of obviousness. Note In Re Aller, 105 USPQ 233 (1955) where it was held that optimizing a particular value within a range would have been obvious to a person of ordinary skill in the art who will easily be able to try different values

within the range of possible values in order to arrive at the best value by simple experimentation. Note that this holding is consistent with the recent Supreme Court decision KSR v. Teleflex, Inc., 82 USPQ2d 1385 (2007) which also described "obvious to try" and "design optimization" tests when considering limitations directed to specific ranges.

Finally, as noted above, there is strong motivation for persons having ordinary skill in the art to set the keep alive currents in Baskett to be as small as possible, i.e., at the time of Baskett's invention (as well as the filing date of the instant invention), reducing power consumption to the greatest possible extent was a paramount consideration which would suggest that the keep alive currents flowing through transistors 16 and 18 in Baskett should be kept as small as possible.

Other Prior Art

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Note also Fig. 3 of Opris, Fig. 2 of Cosand, Fig. 6 of Weiss, Fig. 11 of Lewicki and Fig. 8 of Turvey, each of which shows a further example of using keep alive current sources which are a fraction of the size of the tail current sources.

Action is Final

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth B. Wells whose telephone number is (571)272-1757. The examiner can normally be reached on Monday through Friday from 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew N. Richards, can be reached at (571)272-1736. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Kenneth B. Wells/
Primary Examiner
Art Unit 2816

March 8, 2008